

Appl. No. 10/019,460  
Amendment and/or Response  
Reply to Office action of 6 August 2003

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Amendments to the Claims:

A listing of the entire set of pending claims (including amendments to the claims, if any) is submitted herewith per 37 CFR 1.121. This listing of claims will replace all prior versions, and listings, of claims in the application.

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Listing of Claims:

1. (Currently amended) A deflection unit (10) for a cathode ray tube (14), the deflection unit (10) comprising:

line deflection coils (17),  
frame deflection coils (18) surrounding the line deflection coils (17), and  
a yoke ring (22) having a magnetic permeability  $\mu_r$  and surrounding the frame deflection coils (18), wherein

the deflection unit (10) comprises a magnetic material which is present between the line deflection coils (17) and the frame deflection coils (18) and has a magnetic permeability  $\mu_1$  which satisfies the relation  $\mu_1 < \mu_r$ .

2. (Currently amended) A deflection unit (10) as claimed in claim 1, wherein

void spaces (101) are present between the line deflection coils (17) and the frame deflection coils (18), and

the void spaces (101) are filled with the magnetic material.

3. (Currently amended) A deflection unit (10) as claimed in claim 2, wherein

second void spaces (54,102) are present between the frame deflection coils (18) and the yoke ring (22), and

third void spaces (52) are present between wire strands (50) of the frame deflection coils (18), and

the second and/or third void spaces are filled with a magnetic material (56) having a magnetic permeability  $\mu_2$  which satisfies the relationship  $\mu_2 \geq \mu_1$ .

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4. (Currently amended) A deflection unit (10) as claimed in claim 3, wherein  
the yoke ring comprises at least two parts, a first part (22a) being positioned closer to a neck portion (11) of the cathode ray tube than a second part (22b), and  
wherein  
only the void spaces surrounded by the first part of the yoke ring (22a) are filled with the magnetic material.
5. (Currently amended) A deflection unit (10) as claimed in claim 1, wherein  
the deflection unit (10) further comprises a support for carrying both the frame and the line coils,  
said support comprising the magnetic material.
6. (Currently amended) A deflection unit (751) as claimed in claim 4, wherein  
the first (760) and/or the second (768) part have four coils (722') for generating a magnetic quadrupole field.
7. (Currently amended) A deflection unit (751) as claimed in claim 6, wherein  
said coils (722') comprise electrically conductive wires which are toroidally wound in a winding direction and in accordance with a winding density distribution  $N(\varphi)$  given by  $N(\varphi) = N_0 \cos(2\varphi)$ ;  
where  
 $\varphi$  is an angle enclosed by an X-direction and a line between an element of the coil and the center, which ranges between  $0^\circ$  and  $360^\circ$ ,  
 $N_0$  is the winding density at  $\varphi$  equal to  $0^\circ$ , and  
the sign of  $N(\varphi)$  denotes the winding direction.
8. (Currently amended) A deflection unit as claimed in claim 4, wherein  
the yoke ring further comprises a third part (22e) which is positioned closer to the neck portion (11) of the cathode ray tube than the first part (22a)

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9. (Currently amended) A cathode ray tube assembly (~~10, 14~~) comprising  
a deflection unit (~~10~~) as claimed in claim 1.
10. (Currently amended) A display apparatus, comprising:  
a cathode ray tube assembly as claimed in claim 9,  
control electronics (~~E~~) coupled to receive a video signal (~~VS~~) to apply a display signal  
to the cathode ray tube (~~14~~) and deflection signals to the deflection unit (~~10~~) in dependence on  
the video signal (~~VS~~).
11. (New) A deflection unit for a cathode ray tube, comprising:  
line deflection coils,  
frame deflection coils surrounding the line deflection coils, and  
a yoke ring surrounding the frame deflection coils, comprising at least two parts, a  
first part being positioned closer to a neck portion of the cathode ray tube than a second part,  
wherein  
void spaces are present between the line deflection coils and the frame deflection  
coils, and  
the void spaces surrounded only by the first part of the yoke ring are filled with  
magnetic material.
12. (New) The deflection unit of claim 11, wherein  
the yoke ring has a magnetic permeability  $\mu_r$ ,  
the magnetic material has a magnetic permeability  $\mu_1$ , and  
 $\mu_1 < \mu_r$ .
13. (New) The deflection unit of claim 11, wherein  
the first part includes four coils for generating a magnetic quadrupole field.

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14. (New) The deflection unit of claim 13, wherein

the four coils comprise electrically conductive wires which are toroidally wound in a winding direction and in accordance with a winding density distribution  $N(\varphi)$  given by  $N(\varphi) = N_0 \cos(2\varphi)$ ; where  $\varphi$  is an angle enclosed by an X-direction and a line between an element of the coil and the center, which ranges between  $0^\circ$  and  $360^\circ$ ,  $N_0$  is the winding density at  $\varphi$  equal to  $0^\circ$ , and the sign of  $N(\varphi)$  denotes the winding direction.

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15. (New) The deflection unit of claim 11, wherein

the yoke ring further comprises

a third part that is positioned closer to the neck portion of the cathode ray tube than the first part.

16. (New) A cathode ray tube assembly comprising a deflection unit as claimed in claim 11.

17. (New) A display apparatus, comprising:

a cathode ray tube assembly as claimed in claim 16,

control electronics coupled to receive a video signal to apply a display signal to the cathode ray tube and deflection signals to the deflection unit in dependence on the video signal.